

## CHAPTER 2

### EPA DETAILED QUESTIONNAIRE SURVEY

In August 2001, EPA mailed a short screener survey “Screener Questionnaire for the Aquatic Animal Production Industry” to approximately 6,000 aquatic animal production facilities (USEPA, 2001). EPA received responses from 4,900 facilities with about 2,300 facilities reporting that they produce aquatic animals. EPA used the screener survey information to select a stratified random sample of this industry to receive a detailed questionnaire (USEPA, 2002a). The sample included pond systems, aquariums, trout or salmon production for facilities that produce more than 20,000 pounds per year (lbs/yr). The sample also included other facilities that are not in scope of the rule, given information in the 2001 survey. EPA included such facilities to re-examine its proposal on the scope of the regulation. EPA describes the criteria for the inclusion in the sample frame along with the number of questionnaires mailed out, returned, and usable in the December 29, 2003 Notice of Data Availability (“Notice”) (USEPA, 2003; FR 68:75072). The Notice presents the facility counts, costs, and impacts for net pen, flow-through, and recirculating systems that produce more than 20,000 lbs/yr of trout or salmon or more than 100,000 lbs/yr of other biomass (USEPA, 2003; FR 68:75093-75100).

The data presented in this Chapter represent those facilities that EPA determined to be in the scope of the final rule. That is, the facilities meet two criteria: (1) use net pen, flow-through, or recirculating systems, and (2) produce more than 100,000 lbs/yr. Section 2.1 summarizes the estimated facility counts and how the change from screener survey data to detailed survey data changed the profile of in-scope facilities. The facility counts also highlight the relative roles of the commercial and non-commercial sectors in the aquaculture industry. Section 2.2 contains the information for commercial facilities; Section 2.3 reports the data for noncommercial facilities.

The information in Sections 2.2 and 2.3 is presented separately for flow-through and recirculating systems because the financial characteristics for these two sets of observations differ slightly. For technical reasons, however, the industry is subcategorized into “continuous discharge” (i.e., flow-through and recirculating systems) and “net pens.” For a more complete discussion of the aquaculture industry as a whole, see the industry profile in the proposal EEIA (USEPA, 2002a, Chapter 2).

#### 2.1 FACILITY COUNTS

The U.S. Department of Agriculture reported that there were about 4,000 commercial aquaculture facilities nationwide in 1998 (USDA, 2000). EPA estimates that the number of non-commercial facilities is between 530 to 690 Federal, State, Tribal, and Academic/Research facilities (USEPA, 2002b, see Table 2-2).<sup>1</sup>

Not all aquaculture facilities are affected by the final regulation. EPA estimates that there are approximately 242 “in-scope” facilities that will be affected by the rule. Regulated facilities are

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<sup>1</sup> EPA estimates that there are about 320 noncommercial facilities with net pen, recirculating, or flow-through systems that produce more than 20,000 lbs/yr. (USEPA, 2003; 68 FR 75093).

comprised of 101 commercial (less than 1 percent of all commercial facilities nationwide) and 141 noncommercial (between roughly one-third and one-fourth of all noncommercial facilities). In terms of annual production, EPA estimates that this final regulation affects about 17 percent of total aquacultural production in the United States.<sup>2</sup>

Table 2-1 and Figure 2-1 summarize the national number of facilities estimated to be within the scope of the final rule. The number of facilities shown for commercial and noncommercial in Table 2-1 are estimated with the sample weights derived from the detailed questionnaire. That is, EPA sent detailed questionnaires to some but not all of the facilities withing a stratified sampling plan. Facilities within a stratum share common characteristics so data collected from some of them can be used to extrapolate to all facilities within the stratum by using the facility weights.

The noncommercial group includes Federal, State, and Tribal facilities. No Tribal facilities that returned a detailed questionnaire produced over the 100,000 lb/yr threshold but, if such a facility exists among the facilities that did not receive a detailed questionnaire, it would likely resemble other noncommercial facilities within the scope of the rule.

Facilities in Alaska are different. They practice ocean ranching rather than aquaculture and, although they are not for profit organizations, they report revenue from harvested salmon that return to the release area. EPA identified two Alaska nonprofit facilities that are within the scope of the rule but which were not selected to receive a detailed questionnaire. These are listed separately in Table 2-1. Because they are not represented in the detailed survey, they are not included in the discussion of noncommercial facilities in Section 2.2.

EPA identified no academic or research facilities within the scope of the final rule.

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<sup>2</sup> Based on an estimated 94 million pounds of production by commercial facilities and an estimated 43.3 million pounds of production by noncommercial facilities, as compared to a total U.S. production of estimated total U.S. aquaculture production of about 820 million pounds in 2001 (NMFS, 2003).

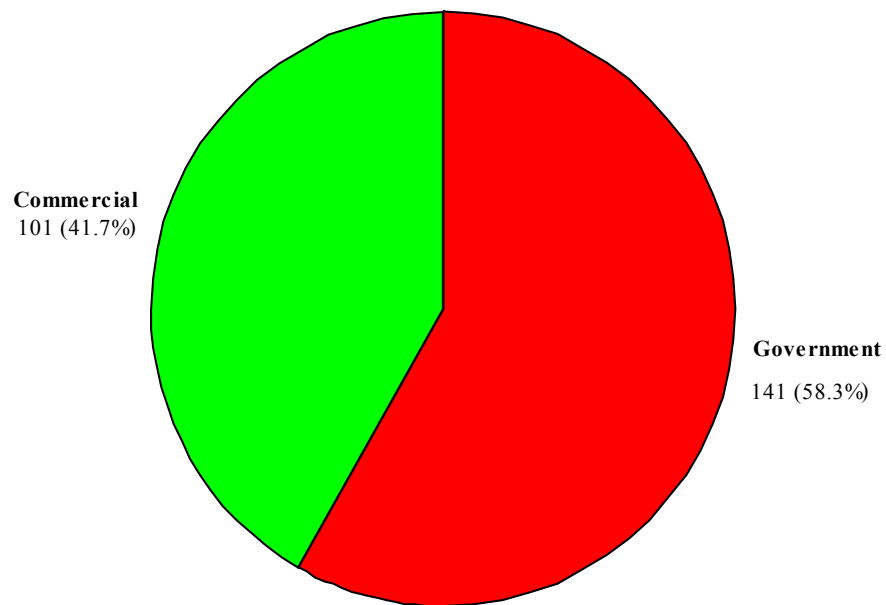
**Table 2-1**  
**Estimated Number of In-Scope Facilities by Organization and Production System**

<b>Organization</b>	<b>Production System</b>	<b>Estimated Number of Facilities</b>
Commercial <sup>1</sup>	Flow-Through	70
	Recirculating	12
	Net Pen	19
Noncommercial <sup>1</sup>	Flow-Through	138
	Recirculating	1
	Net Pen	0
Alaska Nonprofit	Flow-Through	2
<b>TOTAL</b>		<b>242</b>

<sup>1</sup>EPA estimates from detailed survey (USEPA, 2002a).

With the additional information collected in the detailed survey, EPA decided to restrict the scope of the rule to facilities using flow-through, recirculating, or net pen systems that produce more than 100,000 lbs/yr. See the *Development Document* for more details (USEPA, 2004).

**Figure 2-1: Estimated Number of In-Scope Facilities by Organization**



**Table 2-2**  
**In-Scope Commercial Facilities by Geographic Distribution**

<b>State</b>	<b>Number of In-Scope Facilities</b>
California	5
Colorado	6
Georgia	4
Idaho	25
Maine	22
Montana	4
North Carolina	13
Pennsylvania	5
Texas	3
Virginia	4
Washington	4
Other States	6
<b>Total</b>	<b>101</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

## **2.2 COMMERCIAL FACILITIES**

EPA collected information at various organizational levels for commercial facilities:

- Enterprise: Responses reflect fish-raising activities only where the facility or farm is engaged in other businesses outside of aquaculture at the same site.
- Facility: Responses for the facility reflect all activities. If the only activity is raising fish, the facility is the enterprise.
- Company: Responses reflect the aggregation of all facilities under the same ownership. If there is only one facility, the company is the facility.

Data for each of these levels are summarized below.

### **2.2.1 Enterprise Information**

EPA found eight facilities within the scope of this effluent guideline that reported other business activities. This represents about 8 percent of all commercial facilities affected by the rule. For all of these facilities, aquaculture is the primary business activity; however some facilities also engaged in other agricultural activities such as raising livestock. For about half of the facilities, aquaculture was the profitable enterprise, while the other enterprises lost money. These eight facilities employ 80 people and

generated revenues of \$6.3 million in 2001. Due to the small number of facilities, no further detail is provided for reasons of confidentiality.

### **2.2.2 Facility Information**

Nationally, EPA identified 101 commercial facilities within the scope of this regulation. These facilities operate in many different regions and raise a wide variety of species for a number of different markets. Some of these markets include food size fish for sale to wholesalers, restaurants, retailers, or private game and sport clubs for stocking ponds, or eggs, fry, and fingerlings for sale to other aquaculture facilities. The EPA survey did not collect data regarding the “point of first sale,” e.g., a processor or a restaurant, but it is likely that some producers sell their product to more than one type of customer.

#### **2.2.2.1 Geographic Distribution**

Commercial facilities in the detailed questionnaire database and within scope of this regulation are spread over 16 states. Idaho, Maine, and North Carolina have the largest number of in-scope facilities at 25, 22, and 13 facilities, respectively. Table 2-2 summarizes the number of facilities by state for in-scope commercial facilities.

#### **2.2.2.2 Revenues**

EPA’s detailed survey collected financial data for a 3-year period, 1999-2001. EPA estimates that commercial facilities within the scope of EPA’s final rule generated over \$155 million in 2001. NMFS estimated 2001 total U.S. aquaculture production as about \$935 million (NMFS, 2003).<sup>3</sup> Revenues reflect a variety of sales end-points, e.g., sales to processors, direct sales to markets and restaurants, and stocker sales to fee fishing operators.

EPA estimates that net pen facilities have the largest total revenue (\$89 million), average revenue (\$4.4 million per facility), and generate 57 percent of the total industry revenues. Recirculating facilities generated an estimated \$25.8 million in 2001 (17 percent of the industry total). The average recirculating facility generated \$2.1 million in 2001. Flow-through facilities accounted for an estimated 26 percent of total revenue (\$40.3 million) in 2001; however the average flow-through facility generated significantly smaller revenues compared to net pen and recirculating facilities. The average net pen facility revenue was more than 7 times larger than the average flow-through, while the average recirculating was almost 3.5 times larger than the average flow through. Table 2-3 summarizes the total and average revenues for commercial facilities by production system.

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<sup>3</sup>Thus EPA set the scope of the rule to affect less than 3 percent of the commercial facilities yet regulate about 17 percent of the value of production.

**Table 2-3**  
**Estimated 2001 Revenues for Commercial In-Scope Facilities by Production System**

<b>Production System</b>	<b>Number of In-Scope Facilities</b>	<b>Estimated Revenues (Millions, 2001 dollars)</b>	<b>Estimated Facility Revenue* (Millions, 2001 dollars)</b>
Flow-through	70	\$40.3	\$0.6
Recirculation	12	\$25.8	\$2.1
Net pen	19	\$89.0	\$4.4
<b>Total</b>	<b>101</b>	<b>\$155.1</b>	<b>\$1.5</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

\*Average facility revenue is not an average of the total numbers presented in this table. Some facilities either did not provide revenue data, or could not separate facility data from company revenue information. To represent the average accurately EPA took the average based on only those facilities able to provide information.

Over the three year period (1999-2002) for which EPA collected financial data, flow-through and recirculating facilities experienced growth in revenues (Table 2-4). Net pens, in contrast, experienced a increase in revenues from 1999 to 2000 followed by a decrease in revenues in 2001. This is likely due to a combination of an outbreak of infectious salmon anemia (ISA) requiring the destruction of many stocks and lower prices for the stocks surviving in other regions.

**Table 2-4**  
**Estimated Revenues for Commercial In-Scope Facilities by Production System, 1999-2001**

<b>Production System</b>	<b>Number of In-Scope Facilities</b>	<b>Estimated Total Revenues (Millions)</b>		
		<b>2001</b>	<b>2000</b>	<b>1999</b>
Flow-through	70	\$40.3	\$39.0	\$34.3
Recirculating	12	\$25.8	\$24.7	\$21.4
Net pen	19	\$89.0	\$125.1	\$111.4
<b>Total</b>	<b>101</b>	<b>\$155.1</b>	<b>\$188.8</b>	<b>\$167.1</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

Note not all facilities were able to provide data for all three years. Numbers presented here reflect data facilities were able to report.

### **2.2.2.3 Production**

EPA's detailed survey collected production data for three years (1999, 2000, and 2001). The data reflected the life cycle stage (egg, fry, fingerling, stocker, foodsize, or broodstock) and measurement unit used by the respondent (e.g., count or pounds). EPA converted these responses to pounds using the conversion factors presented in Table 2-5. For more information see the *Development Document*

supporting the proposed rulemaking (USEPA, 2002c). To convert counts to pounds, EPA multiplied production counts by the conversion factor for the specified species and size.

**Table 2-5**  
**Conversion Factors for Reporting Production in Pounds (Abridged)**

Species	Size					
	Foodsize	Stockers	Fingerlings	Seed Stock	Brood-Stock	Fry
Catfish	1.50	0.18	0.0334	0.0001	4.3100	0.0014
Trout	1.00	0.32	0.0350	0.0001	2.5000	0.0014
Salmon	5.00	0.32	0.0350	0.0001	10.0000	0.0014
Striped Bass	1.75	0.32	0.0600	0.0001	5.0000	0.0014
Tilapia	1.75	0.32	0.0350	0.0001	2.5000	0.0014
Bass	2.00	0.1418	0.0214	0.0001	3.4247	0.0014
Sturgeon	45.00	0.1418	0.0214	0.0001	3.4247	0.0014
Sunfish	0.25	0.1418	0.0214	0.0001	3.4247	0.0014
Walleye	3.00	0.1418	0.0214	0.0001	3.4247	0.0014
Pike	4.63	0.1418	0.0214	0.0001	3.4247	0.0014
Carp (includes koi, white amour)	4.00	0.1418	0.0214	0.0001	3.4247	0.0014
Shrimp	0.0444	0.1418	0.0214	6.6E-6	0.1000	0.0014

Source: USEPA, 2002c.

Table 2-6 presents EPA's estimate of 2001 production by production system. In that year, EPA estimates that commercial facilities within the scope of this effluent guideline produced about 94 million pounds of fish and other aquatic animals.<sup>4</sup> Over 74 percent of that production was raised in net pen systems. Net pen facilities also have the highest average production with more than three million pounds per year. Their average production is more than four times higher than the average recirculating facility production and more than 12 times greater than those for the average flow-through facility.

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<sup>4</sup> The in-scope population contains at least one example of crustaceans raised in a flow-through, recirculating, or net pen system.

**Table 2-6**  
**Estimated 2001 Production Data for In-Scope Commercial Facilities by Production System**

<b>Production System</b>	<b>Number of In-Scope Facilities</b>	<b>Estimated Production (Million lbs)</b>	<b>Estimated Average Facility Production (Million lbs/facility)*</b>
Flow-Through	70	14.7	0.2
Recirculating	12	9.2	0.7
Net pen	19	70.0	3.4
<b>Total</b>	<b>101</b>	<b>93.9</b>	<b>0.8</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

\*Average facility production is not an average of the total numbers presented in this table. Some facilities either did not provide production, or could not separate facility from company production. To represent the average accurately, EPA calculated the average based only on those facilities able to provide information.

Table 2-7 presents EPA's estimate of aggregate production by production system for 1999-2001. Some facilities did not report production, therefore the production numbers presented here may be underestimated. Trends varied by production system. When a flow-through facility reported production, the facility reported three years of data. Between 1999 and 2001, flow-through facilities decreased production by roughly 2 million pounds (Table 2-7), although estimated revenues increased over the same time period (Table 2-4). This implies flow-through facilities may have been able to charge higher prices in 2001 than 1999 or shifted sales to a more profitable outlet (e.g., from processors to restaurants). Production by recirculating facilities increased by about one million pounds while revenues also increased.<sup>5</sup> Between 1999 and 2001, net pen production, as a whole, increased, but this is attributable to several facilities reporting production for the first time (e.g., start-up facilities or a change in ownership). Revenues among net pen operations decreased over this period (compare with Table 2-4), implying lower prices.

**Table 2-7**  
**Estimated Aggregate Production Data for In-Scope Commercial Facilities by Production System**

<b>Production System</b>	<b>Number of In-Scope Facilities</b>	<b>Estimated Production (Million lbs)</b>		
		<b>2001</b>	<b>2000</b>	<b>1999</b>
Flow-Through	70	14.7	14.9	16.2
Recirculation	12	9.2	9.0	8.6
Net pen*	19	70.0	68.6	56.7
<b>Total</b>	<b>101</b>	<b>93.9</b>	<b>92.5</b>	<b>81.5</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

NOTE: Not all facilities reported production in the survey, therefore numbers presented here are likely to be underestimates.

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<sup>5</sup>Most of the increase in production and revenue is attributable to one facility that did not report results for 1999. All other recirculating facilities reported three years of data.

#### ***2.2.2.4 Employment (Paid and Unpaid)***

EPA collected data on 2001 employment, full and part-time, paid and unpaid, for all commercial facilities in the detailed survey. Numbers presented are in full time equivalents (FTE). That is, two part-time employees working 20 hours a week are presented as one full time employee.

Nationally, EPA projects there to be nearly 955 people employed at commercial facilities within the scope of the final regulation (Table 2-8). Total flow-through employment in 415 FTEs, indicating that flow-through facilities provide 43 percent of the jobs within the scope of the regulation. However, this is due to the large number of flow-through facilities not because of reported high employment at each facility. On average, a flow-through facilities employ about 6 people per facility. In contrast, recirculating facilities employ the smallest total number (reported at 172 FTEs), but the average facility employs about 14 people, more than twice as many as an average flow-through facility. The average net pen facility employs the most people at about 23 per facility with a total employment of 371 FTEs.

EPA also asked each survey respondent to differentiate unpaid labor from paid labor and/or management. Of the 101 commercial facilities within the scope of this final regulation, only 3 facilities reported unpaid labor and/or management (Table 2-8).<sup>6</sup> All three facilities are flow-through facilities. For the purpose of completing Table 2-8, EPA assumes at least one employee per facility. See Appendix A for a more detailed discussion of unpaid labor and/or management in the economic analysis.

#### ***2.2.2.5 Costs and Returns for Flow Through and Recirculating Commercial Facilities***

Table 2-9 presents a summary of the national estimates of the 2001 costs and returns for commercial facilities in the flow through and recirculating subcategory that produce more than 100,000 pounds of aquatic animals per year. These data are based on costs and returns information from EPA's detailed questionnaire (USEPA, 2002b), and include both operations considered baseline failures and facilities that remain profitable in the baseline analysis. Among these facilities, there are 82 in-scope facilities with flow-through or recirculating production systems in the EPA detailed questionnaire data base. Four facilities cannot be analyzed for costs and returns because an unweighted facility changed ownership at the time of the survey and did not supply financial data. The number of observations for this analysis is 78. Although 3 years of financial information were collected by EPA, the data in the table are for 2001 since this is the most recent year for which data were collected.

The average sales estimate for operations that produce between 100,000 lbs/yr and 475,000 lbs/yr is somewhat skewed because two unweighted facilities reported \$0 sales in their survey. This is attributable to the fact that production from these two facilities are transferred to other facilities under the same ownership for further grow-out and or processing. Also, the survey data indicate that not all cost components are individually tracked by the survey respondents, as evidenced by the frequent minimum value of \$0 for several cost categories.

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<sup>6</sup>EPA's decision to define the scope of the analysis to facilities producing more than 100,000 lbs/yr had the effect of removing 44 additional facilities that reported unpaid labor and/or management from the potentially affected population. For the remaining three facilities, EPA examined the effects of including three different estimates for labor costs (e.g., Federal minimum wage, Bureau of Labor Statistics wages for farm managers, and USDA's Agricultural Resource Management Survey (ARMS) estimates for commercial farms) on the economic analysis for those facilities. None of imputed labor costs affected the impacts estimated as a result of the rule (ERG, 2004).

**Table 2-8**  
**Total and Average Employment for In-Scope Commercial Facilities by Production System**

Production System	Number of In-Scope Facilities	Employment (FTE)		Reported Average Facility Employment (FTE)
		Paid	Unpaid	
Flow-Through	70	412	3	6
Recirculation	12	172	0	14
Net pen	19	371	0	23
Total	101	955	3	10

Source: EPA estimates from detailed survey (USEPA, 2002b).

**Table 2-9**  
**National Estimates of Costs and Returns at In-scope, Flow Through or Recirculating, Commercial Facilities, 2001**

Variable	>475,000 lbs/yr (30 facilities)			100,000 lb/y - 475,000 lbs/yr (59 facilities)		
	National Average	Minimum	Maximum	National Average	Minimum	Maximum
Total Sales	\$1,456,563	\$358,000	\$9,766,000	\$441,863	\$140,000	\$1,456,000
Total Expenses	\$1,619,269	\$381,000	\$10,573,000	\$564,332	\$138,000	\$1,610,000
All Variable	\$1,048,959	\$304,000	\$4,311,000	\$353,669	\$69,000	\$1,232,000
Depreciation	\$92,510	\$3,000	\$669,000	\$52,095	\$0	\$304,000
Feed	\$201,696	\$0	\$422,000	\$88,928	\$0	\$249,000
Chemicals	\$65,600	\$0	\$377,000	\$13,110	\$0	\$146,000
Non-Mortgage Interest	\$63,026	\$0	\$612,000	\$5,097	\$0	\$44,000
Labor	\$243,623	\$0	\$1,925,000	\$91,718	\$0	\$503,000
Rent-Vehicle	\$3,312	\$0	\$17,000	\$2,722	\$0	\$29,000
Rent-land	\$71,216	\$0	\$277,000	\$12,279	\$0	\$68,000
Repairs	\$39,498	\$0	\$227,000	\$24,226	\$0	\$103,000
Energy	\$119,541	\$0	\$801,000	\$54,793	\$0	\$281,000
COGS	\$562,405	\$0	\$7,861,000	\$49,833	Cash basis	\$438,000
All Fixed	\$46,314	\$0	\$346,000	\$44,275	\$0	\$161,000
Taxes	\$23,869	\$0	\$230,000	\$22,026	\$0	\$69,000
Interest-Mortgage	\$6,219	\$0	\$18,000	\$1,952	\$0	\$16,000
Insurance	\$16,226	\$0	\$116,000	\$20,297	\$0	\$9,200

Source: USEPA detailed survey (USEPA, 2002b).

Variable Costs: Labor (hired labor, including management if paid); Feed purchased (production and medicated); Chemicals (including fertilizers and lime); Energy (utility costs, gasoline, fuel, and oil); Depreciation; Interest (other than mortgage interest, although may or may not be interest on operating loan); Repairs/maintenance; Cost of aquatic animals (only if the respondent used accrual accounting); Other rent or lease (vehicles, machinery, equipment, land, animals, etc.). Fixed Costs: Insurance (other than health); Interest (mortgage interest); Taxes.

#### **2.2.2.6 “Captive Facilities”**

A site is classified as “captive” when a certain percentage of its production is shipped to other sites under the same ownership. EPA found seven such commercial sites that ship all of their production to other sites under the same ownership. All of these sites are salmon hatcheries that exist solely to supply fingerlings to net pen sites under the same ownership for grow-out. For these facilities, the closure analysis defaults to the company level.

### **2.2.3 Company Information**

At the company level, EPA collected information on organization type, revenues (for 2001), and assets (for 2001). EPA collected company-level revenue data because Small Business Administration (SBA) sets the small business standard for this industry as \$750,000 in annual revenues with revenues as reported at the top of the corporate hierarchy, not the facility level (i.e., it is possible that a large company is made up of a number of “small” facilities, see SBA, 2001). EPA also collected data on assets and liabilities to use USDA’s methodology for evaluating farm financial health using company-level debt/assets ratios.

#### **2.2.3.1 Number of Companies**

The 101 in-scope commercial facilities are a national estimate calculated by multiplying the raw data from 37 unweighted in-scope commercial facilities by statistical survey weights. EPA reviewed the 37 unweighted in-scope commercial facilities that received a detailed survey to determine their corporate parent. These facilities were owned by 34 companies. Of these 34 companies, 30 are single-facility companies. The statistical weights, however, are developed on the basis of facility characteristics and therefore cannot be used for estimating the number of companies. Hence, it is not appropriate to combine the two sets of counts (e.g., it is not appropriate to divide 101 facilities by 34 companies to arrive at slightly under 3 facilities per company). The domestic industry is characterized by companies operating only one site.

Most of the multi-site companies raise salmon. These operations consist of either multiple net pen sites or a combination of flow-through hatcheries and net pen grow-out sites (e.g., “captive” facilities).

#### **2.2.3.2 Company Organization**

The 34 companies owning the 37 (unweighted) in-scope commercial facilities are organized as:

- 16 C corporations
- 12 S or limited liability corporations
- 2 limited partnerships
- 4 sole proprietorships

One of the 34 companies is publicly-held. All others are either privately-held or foreign. Public data on foreign firms would not include details on specific U.S.-based operations. EPA’s survey is, therefore, the

only source of financial information for the U.S. divisions of foreign firms and privately-held companies. The foreign companies are concentrated in the salmon industry.

#### ***2.2.3.3 Revenues***

EPA is not presenting company-level revenues for reasons of confidentiality. Of the 34 (unweighted) companies, EPA assumes that 30 companies in the economic analysis are single-facility companies. Reporting company revenues might compromise the revenue information for the four multi-facility companies.

#### ***2.2.3.4 Number of Small Businesses***

Of the 34 companies, 11 report \$750,000 or less in annual revenues, i.e., they meet the SBA definition of a small business among aquaculture facilities (SBA, 2001).

#### ***2.2.3.5 Assets***

EPA collected balance sheet information at the company-level for all companies (Table 2-10). Since most companies operate only one site or utilize only one production system, EPA was able to separate assets by production system used for purposes of comparison. In a few cases, a company owned more than one facility and the company assets represented more than one production system. An example would be flow-through salmon facilities that produce smolts or fingerlings which are then transferred to net pens for grow-out. Because salmon sales from the net pen facilities form most, if not all, company sales, all company assets are allocated to the net pen production systems for the example company.

Companies operating flow-through facilities make up 59 percent of the total companies, but account for only 10 percent of total industry assets. Based on EPA's detailed survey, the average company operating a flow-through facility has \$633,000 in assets. In contrast, net pen companies, 24 percent of all companies, account for over 71 percent of total assets (\$88.6 million) and also have the largest average assets (\$11.1 million). The average net pen facility has more than 18.5 times the assets of a flow-through facility and more than three times the assets of a recirculating facility. Companies operating primarily recirculating constitute 17 percent of all companies, and 18 percent of total assets, with the average recirculating company possessing about \$3.7 million dollars in assets.

**Table 2-10**  
**Total and Average 2001 Assets Reported by In-Scope Commercial Facilities by Production System**

<b>Production System</b>	<b>Number of (Unweighted) In-Scope Companies</b>	<b>2001 Assets (Millions)</b>	<b>2001 Average Assets (Millions)</b>
Flow-Through	20	\$12.6	\$0.6
Recirculating	6	\$22.2	\$3.7
Net pen	8	\$88.6	\$11.1
<b>Total</b>	<b>34</b>	<b>\$123.4</b>	<b>\$15.4</b>

Source: EPA estimates from detailed survey (USEPA, 2002b).

## **2.3 NONCOMMERCIAL FACILITIES**

Noncommercial facilities raise aquatic animals for a wide variety of reasons including, but not limited to, research, mitigation for dam construction, supporting Tribal fishing rights, restocking of sport fishing stocks, and protection of endangered species. Commercial sales are not the primary reason these facilities operate. Examples of noncommercial facilities include Federal and State hatcheries, academic/research, Alaska nonprofit, and Tribal operations. Noncommercial facilities do not materially operate in a market economy nor are they required to generate balance sheets according to generally accepted principles. EPA, therefore, limited its information request in its detailed questionnaire to income sources, operating budgets, and production.

### **2.3.1 Facility Counts**

Government facilities (Federal and State hatcheries) form the majority of in-scope noncommercial facilities. EPA estimates that there are approximately 141 noncommercial facilities with production greater than 100,000 lbs/yr. As explained in Section A.1, detailed questionnaire data are available for an estimated 139 noncommercial facilities. If the individual observations in the data set are multiplied by summary weights and all of the estimated counts are assigned to the classification of the observation that completed the detailed questionnaire, there are approximately 33 Federal facilities and 106 State facilities. Tribal facilities and the estimated impacts on them are assumed to be similar to these other noncommercial facilities. Alaska nonprofit facilities are not included in the presentation of detailed questionnaire data.

### **2.3.2 Production**

Table 2-11 summarizes EPA's estimates of 2001 production from Federal and State facilities. Federal hatcheries are the largest in terms of average production at more than 430,000 lbs/yr, while State hatcheries, on average, produce 280,000 lbs/yr. All together, noncommercial facilities within the scope of the rule produced about 43.3 million pounds in 2001 (Table 2-11). Comparing information in Table 2-11 with that in Table 2-6, EPA estimates that there are 1.37 noncommercial facilities per commercial facility (i.e., 101 commercial facilities and 141 noncommercial facilities), but each noncommercial facility produces about 44 percent of a typical commercial facility (310,000 pounds to 700,000 pounds). There

are several reasons for the differences between commercial and noncommercial facilities. Noncommercial facilities focus on getting a single crop in the water at a specific point in time while commercial facilities stagger their production to make bring in income throughout the year. Some noncommercial facilities focus on restoring endangered species and limit production to the capacity of the water body. Commercial facilities seek to maximize production for a given set of fixed costs. Commercial production figures also include the large net pen systems not seen in the noncommercial sector.

**Table 2-11**  
**Estimated Production and Employment for In-Scope Noncommercial Facilities by Type**

<b>Production System</b>	<b>Number In-Scope Facilities</b>	<b>Estimated Employment (FTE)</b>	<b>Estimated 2001 Production (Million lbs)</b>	<b>2001 Average Facility Employment</b>	<b>2001 Average Production (Million lbs)</b>
Federal	33	275	14.1	8	0.43
State	106	1,288	29.2	12	0.28
Total	139	1,563	43.3	11	0.31

Source: EPA estimates from detailed survey (USEPA, 2002b).

### **2.3.3 Employment**

Table 2-11 shows employment information. Overall, the in-scope noncommercial sector accounts for an estimated 1,563 jobs, of which 1,288 belong to State facilities. A typical State facility has 12 employees, about 1.5 times that for a Federal hatchery. The average production for a State facility is 64 percent that of a Federal hatchery.

### **2.3.4 Funding Sources**

Noncommercial facilities derive their funding from a variety of sources. Unlike commercial facilities, EPA found few noncommercial facilities that sell more than a small amount of their production. Instead, their production is released into lakes, streams, and rivers to replenish wild stocks of endangered species and game fish. This lack of sales among these facilities means that these organizations rely on other sources to fund their operations. A number of State and Federal facilities, especially ones located in the West, receive funding as mitigation projects for dams that obstruct the natural spawning of species such as salmon. Other sources of revenue reported by State facilities includes Federal grants, State general funds, and fishing licenses.

EPA's detailed survey of noncommercial facilities collected information on operating budgets and also requested that the respondent identify facility funding from fishing licenses, commercial fishing permits, vanity tags for vehicles, and special-purpose stamps. For the purpose of this analysis, EPA combined these funds under the general term "User Fees." User fees offer States a way to meet the incremental costs of added pollution control. This option is not available to Federal or Tribal facilities. Among the 106 state facilities, 58 (55 percent) reported some type of income from user fees during 2001.

Of those facilities reporting user fees, the fees on average funded 81 percent of the budget for the facilities.

## 2.4 REFERENCES

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